

The Relationship Between a Smoker's Ability to Reduce Cigarette Number, With or Without Nicotine Replacement, and Urinary Levels of Cotinine and its Metabolite, *trans*-3'-Hydroxycotinine.

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The number of cigarettes consumed daily varies significantly among chronic smokers. Individual differences in nicotine metabolism may contribute to this variable consumption. These metabolic differences may in turn influence the ability of individuals to reduce their daily smoking. In an on-going smoking reduction study we are investigating this question by determining the relationship between percent cigarette reduction and urinary nicotine metabolites. In this study smokers follow a stepwise protocol to reduce the number of cigarettes they smoke to 75% of their baseline consumption. The use of nicotine replacement therapy (NRT), primarily 4 mg gum was encouraged. In a preliminary evaluation of 33 subjects the baseline levels of urinary cotinine and its metabolite *trans*-3'-hydroxycotinine were determined for three groups; 1) subjects who were able to reduce greater than 65% and maintain that reduction for 2 weeks (n=15), 2) subjects who reduced 45 to 65% (n=13) and 3) subjects unable to reduce and maintain cigarette consumption to less than 45% of baseline (n=5). Average urinary cotinine levels in the three groups at baseline (week 0) were 4470 ± 1520 , 4515 ± 2110 and 3900 ± 3420 ng/ml and *trans*-3'-hydroxycotinine levels were 8570 ± 5700 , 9020 ± 4510 and 8350 ± 1560 ng/ml, respectively. The average daily cigarette consumption levels in group 1, the most successful group, were 24.9 ± 5.2 (week 0), 11.4 ± 2.3 (week 4) 6.4 ± 1.4 (week 6) and 5.3 ± 2.7 (week 8). The average urinary cotinine and *trans*-3'-hydroxycotinine levels were 5900 ± 3210 and $14,500 \pm 9380$, 5400 ± 2802 and $11,100 \pm 8680$, 5480 and 9040 ± 6920 ng/ml at weeks 4, 6 and 8, respectively. Preliminary evaluation suggests these smokers maintained their level of nicotine consumption both by changing the extent to which they smoke the reduced number of cigarettes and by the use of NRT. The degree to which these smokers reduced their exposure to the tobacco specific lung carcinogen NNK is being determined in collaboration with Hecht and co-workers (Losey et al poster). How differences in nicotine metabolism effect an individual smoker's nicotine consumption is being investigated.